AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A method for modifying a representation of a surface on a computational system, comprising

graphically displaying a particular surface having first and second curves provided thereon;

activating, by a user of the computational system, a user interface technique for deforming said particular surface, wherein the following steps A-1 through A-3 are performed:

(A-1) first determining points on a first geometric object representation, wherein said first geometric object representation represents first data used in evaluating a desired contour of said particular surface at a majority of points on said first curve that are representable by said computational system;

(A-2) second determining points on a second geometric object representation, wherein said second geometric object representation represents second data used in evaluating a desired contour of said particular surface at a majority of points on said second curve that are representable by said computational system;

(A-3) generating a modified version of said particular surface, wherein there are a plurality of new points on said modified version that are not on said particular surface, and each said new point is determined as a function of: (a) at least one point obtained from said first geometric object representation, and (b) at least one point obtained from said second geometric object representation; and

graphically displaying said modified version; and

wherein said generating step includes computing, for each of one or more of said new points, a weighted sum of at least one point on each of said first and second geometric object representations.

2. (Original) The method as claimed in Claim 1, wherein at least one of said first and second geometric object representations includes a representation of a surface.

3. (Cancelled)

4. (Previously Presented) The method as claimed in Claim 1, wherein said computing step includes establishing for each of one or more of said new points, one or more corresponding weights of said weighted sum, wherein each said weight, w, scales a corresponding point, p_w, of one of said first and second geometric object representations.

5. (Original) The method as claimed in Claim 4, wherein said establishing step includes determining, for each point q of a set Q of said new points, and at least one weight, w_q, of said corresponding weights for said new point q, a distance-like measurement D_{w_q} that is dependent upon:

(a) a pre-image parameterization of said new point q, and

(b) a pre-image parameterization of a point s_q that is on both said modified version, and said geometric object representation containing said point, p_{w_q}, for said weight w_q.

6. (Original) The method as claimed in Claim 5, wherein for q_1 and q_2 of said set Q, when said pre-image parameterization of q_1 is closer to a pre-image parameterization of s_{q_1} than said pre-image parameterization of q_2 is to a pre-image parameterization of s_{q_2} then $D_{w_{q_1}} \leq D_{w_{q_2}}$.

7. (Previously Presented) A method for deforming a particular surface, comprising:

providing a particular surface;

first obtaining first data for defining a first geometric object having a dimension greater than or equal to two, wherein said first geometric object includes a first part that substantially coincides with a first portion of said particular surface;

first determining first points of said first geometric object, said first data used in determining said first points, wherein at least some of said first points are spaced apart from said particular surface;

second obtaining second data for defining a second geometric object, wherein said second geometric object includes a second part that substantially coincides with a second portion of said particular surface;

second determining second points of said second geometric object, said second data used in determining said second points, wherein at least some of said second points are spaced apart from said particular surface;

generating a modified version of said particular surface, wherein (i) and (ii) following are satisfied:

(i) said modified version includes said first and second portions; and

(ii) there are a plurality of new points on said modified version that are not on said particular surface, and each said new point is determined as a function of (a) and (b) following:

(a) for at least one point, p_1, from the at least some of said first points, a distance-like value indicative of a spacing between: a position identified by a location of p_1, and said first part, and

(b) for at least one point, p_2, from the at least some of said second points, a distance-like value indicative of a spacing between: a position identified by a location of p_2, and said second part; and

graphically displaying said modified version;

wherein said generating step includes determining, for each of one or more of said new points, a weighted sum obtained using at least one point from each of said first points and said second points.

8. (Original) The method as claimed in Claim 7, wherein at least one of said first and second data includes a representation of a surface.

9. (Cancelled)

10. (Previously Presented) The method as claimed in Claim 7, wherein said determining step includes establishing for each of one or more of said new points, one or more corresponding weights of said weighted sum, wherein each said weight, w, scales a corresponding point, p_w, from one of said first points and said second points.

11. (Original) The method as claimed in Claim 10, wherein said establishing step includes determining, for each point q of a set Q of said new points, and at least one weight, w_q, of said corresponding weights for said new point q, a distance-like measurement D_{w_q} that is dependent upon:

(a) a pre-image parameterization of said new point q, and

(b) a pre-image parameterization of a point s_q that is on both: (1) said modified version, and (2) one of said first and second geometric objects containing said corresponding point, p_{w_q}, for said weight w_q.

12. (Original) The method as claimed in Claim 11, wherein for q_1 and q_2 of said set Q, when said pre-image parameterization of q_1 is closer to a pre-image parameterization of s_{q_1} than said pre-image parameterization of q_2 is to a pre-image parameterization of s_{q_2} then $D_{w_{q_1}} \lesseqq D_{w_{q_2}}$.

13. (Original) A method for providing a representation of a surface on a computational system, comprising:

providing or using a computational system for performing steps (1) through (4) following:

(1) first obtaining first shape data indicative of a shape of at least a first portion of a first surface;

(2) first determining, using said first shape data, at least a collection (**C**) of representations of geometric points, wherein the collection **C** is indicative of a first geometric object having a dimension greater than or equal to two, and wherein (A-1) and (A-2) following hold:

(A-1) each of the point representations of **C** includes geometric position data that is invariant between graphical views, and, in at least one graphical view of the point representations, the point representations are distinct from said first portion;

(A-2) each point representation of the collection **C** is determined using said first shape data;

(3) generating a representation (**R**) of said first surface, wherein for at least a subcollection of points of **R**, the subcollection being representative of a surface portion of said first surface, each point **q** of the subcollection, is determined by performing the following steps (B-1) through (B-3):

(B-1) obtaining a point representation $\mathbf{p_q}$ from the collection **C**;

(B-2) determining closeness data, $\mathbf{d_q}$, indicative of a closeness between $\mathbf{p_q}$ and a corresponding point representation $\mathbf{p_s}$ of said first shape data, wherein $\mathbf{p_s}$ is used in determining $\mathbf{p_q}$; and

(B-3) using said closeness data $\mathbf{d_q}$ and the point representation $\mathbf{p_q}$ in determining **q**;

wherein as instances of the point representation $\mathbf{p_q}$ become progressively closer to their corresponding point representations $\mathbf{p_s}$, the corresponding instances of closeness data $\mathbf{d_q}$ are used for determining corresponding instances of **q** such that said corresponding instances of **q** become progressively closer to their respective corresponding $\mathbf{p_q}$ instances; and

(4) graphically displaying said representation **R** of said first surface.

14. (Original) The method of Claim 13, wherein for substantially all points **p** of said first geometric object, the graphical view invariant geometric position data for **p** is determined using a corresponding geometric computation for the first geometric object, wherein said corresponding geometric computation receives as input at least two independently varying parameters, wherein:

(a) when values are provided for the parameters such that a first of the parameters has a fixed value and a second of the parameters is assigned values over a range of values, a first set of geometric position data for the first geometric object is determined, and

(b) when values are provided for the parameters such that a second of the parameters has a fixed value and the first parameter is assigned values over a range of values, a second set of geometric position data for the first geometric object is determined;

wherein said first and second sets of points are different; and

wherein said step of first determining includes determining the geometric position data of $\mathbf{p_q}$ in the collection **C** by using said corresponding geometric computation with values for the at least two independent parameters corresponding to $\mathbf{p_q}$.

15. (Original) The method of Claim 13, wherein said step of first determining includes determining the geometric position data of $\mathbf{p_q}$ by activating a geometric computation with values for at least two independent parameters corresponding to $\mathbf{p_q}$, wherein said geometric computation is determined using said first shape data; and

wherein:

(a) when values are provided for the parameters such that a first of the parameters has a fixed value and a second of the parameters is assigned values over a range of values, a first set of geometric position data for the first geometric object is determined, and

(b) when values are provided for the parameters such that a second of the parameters has a fixed value and the first parameter is assigned values over a range of values, a second set of points of the first geometric object are determined;

wherein said first and second sets of geometric position data are different.

16. (Original) The method of Claim 13, wherein said first shape data includes tangent data indicative of a tangent to said first portion of the first surface.

17. (Original) The method of Claim 16, wherein said tangent is tangent to said first geometric object.

18. (Original) The method of Claim 13, wherein said surface portion (**SP**), represented by the subcollection, has a parametric pre-image of at least two independent variables.

19. (Original) The method of Claim 13, wherein said surface portion (**SP**), represented by the subcollection, has a non-zero surface area.

20. (Original) The method of Claim 13, wherein substantially all points of said first shape data are included in said first geometric object.

21. (Original) The method of Claim 13, wherein substantially all points of said first shape data are points of said first portion.

22. (Original) The method of Claim 13, wherein substantially all points of said first portion are points of said first shape data.

23. (Original) The method of Claim 13, wherein for at least some of the points $\mathbf{p}_q$, the corresponding point $\mathbf{p}_s$ also corresponds with a point of said first portion.

24. (Original) The method of Claim 13, wherein said graphical display of said representation **R** includes said first portion.

25. (Original) The method of Claim 13, wherein said first portion consists essentially of a one dimensional geometric object.

26. (Original) The method of Claim 25 wherein said first geometric entity is a curve.

27. (Original) The method of Claim 13, wherein **R** includes a plurality of first surface points that are not representative of locations of points of said first geometric object.

28. (Original) The method of Claim 13, wherein at least some instances of said closeness data $\mathbf{d}_q$ are determined from using parametric pre-images of corresponding instances of $\mathbf{p}_s$ and $\mathbf{p}_q$.

29. (Original) The method of Claim 13, wherein at least most of the point representations of **C** are not within a predetermined distance of said first geometric entity, wherein the predetermined distance is sufficiently small so that a value that is not larger than said predetermined distance is considered substantially equivalent to zero.

30. (Original) The method of Claim 13, wherein said first geometric entity includes a representation that is invariant between graphical views.

31. (Original) The method of Claim 13, wherein said first shape data includes geometric data that is invariant between graphical views.

32. (Original) The method of Claim 13, wherein said step of first obtaining includes using points of said first portion for obtaining one or more of orientation and position information included in said first shape data, wherein said orientation information is used for defining an orientation of said first geometric object, and said position information is used for defining a position of said first geometric object.

33. (Previously Presented) The method of Claim 13, wherein for each geometrical view of said first geometric object, when said first portion is also displayed, the display of said first portion is coincident with a display of said first geometric object.

34. (Original) The method of Claim 13, wherein said computational system further performs the following steps:

selecting a particular surface for deforming;

deforming said particular surface for obtaining a different contour, and thereby obtaining said first surface as a deformed version of said particular surface;

wherein said step of deforming includes performing said steps first obtaining, first determining, and generating.

35. (Original) The method of Claim 34, wherein for at least a portion of said particular surface, there is a corresponding portion of said first surface that effectively coincides therewith.

36. (Original) The method of Claim 34, wherein said first surface effectively includes at least a portion of said first geometric object.

37. (Original) The method of Claim 36, wherein said particular surface effectively includes the portion of said first geometric object.

38. (Original) The method of Claim 37, wherein the portion of said first geometric object is no more than a predetermined distance from said particular surface, wherein the predetermined distance is sufficiently small so that a value that is not larger than said predetermined distance is considered substantially equivalent to zero.

39. (Original) The method of Claim 34, wherein said computational system further performs the following steps:

receiving a substantially continuous time series of input change requests indicative of requested deformations to said particular surface; and

repeatedly performing said deforming step as a response to the change requests.

40. (Original) The method of Claim 39, wherein said step of repeatedly performing includes interatively performing said deforming step during said step of receiving so that the particular surface is perceived as being deformed substantially in real time with the receiving of said change requests.

41. (Original) The method of Claim 40, wherein said first geometric object is effectively coincident with said particular surface at said first geometric object.

42. (Original) The method of Claim 34, wherein said computational system further performs a step of:

second determining of at least a collection ($\mathbf{C_2}$) of representations of geometric points indicative of a second geometric object different from said first geometric object, wherein the point representations of $\mathbf{C_2}$ are invariant between graphical views, and in at least one graphical view of the point representations of $\mathbf{C_2}$, said point representations are displayed distinct from said first portion;

said step of generating further including, for determining each point $\mathbf{r}$ of at least some points of $\mathbf{R}$, the following steps (C-1) through (C-3):

(C-1) obtaining a point representation $\mathbf{p_r}$ from the collection $\mathbf{C_2}$;

(C-2) determining closeness data, $\mathbf{d_r}$, indicative of a closeness between $\mathbf{p_r}$ and a corresponding point representation $\mathbf{p_t}$ for a second shape of at least a particular portion of said second geometric object, wherein $\mathbf{p_t}$ is used in determining $\mathbf{p_r}$; and

(C-3) using said closeness data $\mathbf{d_r}$ and the point representation $\mathbf{p_r}$ in determining $\mathbf{r}$.

43. (Original) The method of Claim 42, wherein for at least one point of $\mathbf{R}$, said steps (B-1), (B-2), (B-3), (C-1), (C-2) and (C-3) are performed for determining the at least one point of $\mathbf{R}$, wherein $\mathbf{q}$ and $\mathbf{r}$ are identical to the at least one point of $\mathbf{R}$.

44. (Original) The method of Claim 43, wherein said steps (B-3) and (C-3) are included in a step of performing a weighted summation.

45. (Original) The method of Claim 42, wherein

for a second portion of said particular surface, there is a second corresponding portion of said first surface that effectively coincides said second portion of said particular surface; and

said different contour approaches a second shape, different from said shape, when points of said first surface approach said second geometric object.

46. (Original) The method of Claim 42, wherein said second geometric object has a dimension greater than or equal to two, and wherein said second geometric object is defined by second data that represents geometric data that is invariant between graphical views of said second geometric object.

47. (Original) The method of Claim 13, wherein for determining at least one instance of $\mathbf{q}$, said step of determining the corresponding closeness data $\mathbf{d_q}$ includes performing a stellating process.

48. (Original) The method of Claim 13, wherein said step (B-2) of determining the closeness data $\mathbf{d_q}$ includes evaluating a distance-like function for obtaining a distance-like measurement between a pre-image of the corresponding instance of $\mathbf{p_q}$ and a pre-image of the corresponding instance of $\mathbf{p_s}$, wherein said distance-like function satisfies the condition that as the pre-images of instances of the points $\mathbf{p_q}$ get progressively closer to the pre-image of instances of their corresponding points $\mathbf{p_s}$, then said corresponding distance-like measurements become progressively closer to zero.

49. (Original) The method of Claim 13, wherein for points q_1 and q_2 of said first surface, when:

(i) q_1 is determined by performing instances of (B-1) through (B-3) thereby obtaining: p_{q_1} for the point representation $\mathbf{p_q}$, p_{s_1} for the corresponding point representation $\mathbf{p_s}$, and d_{q_1} for the corresponding closeness data $\mathbf{d_q}$, and

(ii) q_2 is determined by performing instances of (B-1) through (B-3) thereby obtaining: p_{q_2} for the point representation $\mathbf{p_q}$, p_{s_2} for the corresponding point representation $\mathbf{p_s}$, and d_{q_2} for the corresponding closeness data $\mathbf{d_q}$,

then when $d_{q_1} < d_{q_2}$, then q_1 is more strongly influenced by p_{q_1} than q_2 is influenced by p_{q_2}.

50. (Original) The method of Claim 13, wherein said step (B-3) includes a step of inputting said corresponding closeness data $\mathbf{d_q}$ to a first blending function ($\boldsymbol{B}_1$).

51. (Original) The method of Claim 50, wherein said step (B-3) includes a step of scaling said point representation $\mathbf{p_q}$ by an output from said blending function $\boldsymbol{B}_1$.

52. (Original) The method of Claim 50, wherein said blending function $\boldsymbol{B}_1$ satisfies the following conditions (i) through (iii):

(i) $\boldsymbol{B}_1(\mathbf{d_q})$ approaches a first predetermined value as $\mathbf{d_q}$ approaches zero;

(ii) $\boldsymbol{B}_1(\mathbf{d_q})$ approaches a second predetermined value as $\mathbf{d_q}$ approaches a predetermined non- zero value; and

(iii) $\boldsymbol{B}_1$ is one or more of: continuous and differentiable on a domain including a range of $\mathbf{d_q}$ effective for computing points $\mathbf{q}$ of the subcollection.

53. (Original) The method of Claim 52, wherein said computational system further performs the steps of:

second obtaining second shape data indicative of a shape of at least a second portion of the first surface;

second determining, using said second shape data, at least a collection ($\mathbf{C}_2$) of representations of geometric points indicative of a second geometric object, wherein at least some of said geometric point representations of $\mathbf{C}_2$ do not effectively coincide with said second portion;

wherein said second geometric object is indicative of a shape of said first surface substantially at the second portion;

wherein for determining at least one of the points **q** of the subcollection, the following steps (C-1) through (C-3) are performed:

(C-1) obtaining a point representation $\mathbf{u}_q$ from the collection $\mathbf{C}_2$;

(C-2) determining closeness data, $\mathbf{dd}_q$, indicative of a closeness between $\mathbf{u}_q$ and a corresponding point representation $\mathbf{p}_t$ of said second shape data;

(C-3) using the closeness data, $\mathbf{dd}_q$ and the point representation $\mathbf{u}_q$ in determining **q**, including a step of inputting the corresponding closeness data $\mathbf{dd}_q$ to a blending function B_2, wherein B_2 satisfies the following conditions (i) through (iii):

(i) $B_2(\mathbf{dd}_q)$ approaches a third predetermined value as $\mathbf{dd}_q$ approaches zero;

(ii) $B_2(\mathbf{dd}_q)$ approaches a fourth predetermined value as $\mathbf{dd}_q$ approaches a predetermined non- zero value; and

(iii) B_2 is continuous and differentiable on a domain including a range of $\mathbf{dd}_q$ effective for computing said at least one point **q**;

wherein said step of (B-3) includes a step of using said closeness data $\mathbf{dd}_q$ and the point representation $\mathbf{u}_q$ in determining **q**.

54. (Original) The method of Claim 53, wherein **q** is a function of:

$$B_1(\mathbf{d}_q)^* \, \mathbf{p}_q \text{ and } B_2(\mathbf{dd}_q)^* \, \mathbf{u}_q.$$

55. (Previously Presented) The method of Claim 52, wherein said computational system further performs the following steps:

selecting a particular surface for deforming;

deforming said particular surface for obtaining a different shape, and thereby obtaining said first surface as a deformed version of said particular surface;

wherein said step of deforming includes performing said steps first obtaining, first determining, and generating;

wherein when there is second shape data indicative of at least a particular portion of the particular surface such that said particular portion is not deformed in said step of deforming, then $\boldsymbol{B}_1(\mathbf{d}_q)$ approaches zero when $\mathbf{p}_q$ approaches said particular portion.

56. (Previously Presented) The method of Claim 13, wherein said computational system further performs the steps of:

second obtaining second shape data indicative of a shape of at least a second portion of the first surface;

second determining, using said second shape data, at least a collection ($\mathbf{C}_2$) of representations of geometric points indicative of a second geometric object, wherein at least some of said geometric point representations of $\mathbf{C}_2$ do not effectively coincide with said second portion;

wherein said second geometric object is indicative of a shape of said first surface substantially at the second portion;

wherein for determining at least one of the points $\mathbf{q}$ of the subcollection, the following steps (C-1) through (C-2) are performed:

(C-1) obtaining a point representation $\mathbf{u}_q$ from the collection $\mathbf{C}_2$;

(C-2) determining closeness data, $\mathbf{dd}_q$, indicative of a closeness between $\mathbf{u}_q$ and a corresponding point representation $\mathbf{p}_t$ of said second shape data, wherein $\mathbf{p}_t$ is used in determining $\mathbf{u}_q$; and

wherein said step of (B-3) includes a step of using said closeness data $\mathbf{dd}_q$ and the point representation $\mathbf{u}_q$ in determining the at least one point $\mathbf{q}$ of the subcollection.

57. (Previously Presented) The method of Claim 56, wherein said step of (B-3) determines $\mathbf{q}$ using weightings for $\mathbf{p}_q$ and $\mathbf{u}_q$.

58. (Previously Presented) The method of Claim 56, wherein said step of (B-3) determines at least one instance of **q** as a weighted sum, said weighted sum including a weighted sum of the corresponding $\mathbf{p}_\mathbf{q}$ and the corresponding $\mathbf{u}_\mathbf{q}$.

59. (Previously Presented) The method of Claim 56, wherein said computational system further performs a step of inputting said corresponding data $\mathbf{dd}_\mathbf{q}$ to a blending function B_2, wherein B_2 satisfies the following conditions:

(i) $B_2(\mathbf{dd}_\mathbf{q})$ approaches a third predetermined value as $\mathbf{dd}_\mathbf{q}$ approaches zero;

(ii) $B_2(\mathbf{dd}_\mathbf{q})$ approaches a fourth predetermined value as $\mathbf{dd}_\mathbf{q}$ approaches a non-zero value; and

(iii) B_2 is continuous and differentiable on a domain including a range of $\mathbf{dd}_\mathbf{q}$ effective for computing the at least one point **q** of the subcollection.

60. (Original) The method of Claim 59, wherein the at least one point **q** of the subcollection is a function of $B_2(\mathbf{dd}_\mathbf{q}) * \mathbf{u}_\mathbf{q}$.

61 (Original) The method of Claim 59, wherein said third predetermined value is effectively zero.

62. (Original) The method of Claim 13, wherein said function is such that:

(i) the first geometric object effectively includes the first portion of the first surface; and

(ii) a contour of said first surface approaches said shape of the first portion when points of said first surface approach said first portion.

63. (Original) The method of Claim 62, wherein said first geometric object and said first portion are within 10^{-3} to 10^{-6} of one another.

64. (Original) The method of Claim 62, wherein a distance between said first geometric object and said first portion is settable by a user.

65. (Original) The method of Claim 13, wherein said step of graphically displaying is performed in an application for one of: designing a container, designing a vehicle body, aerospace trimming and patching operations, designing a watercraft hull or watercraft propeller, designing an engine, designing a piping layout, designing a sheet metal product, designing toys, tool and die design, clothing design, shoe design, architectural design, virtual reality design.

66. (Original) The method of Claim 13 wherein when the instances of **q** are such that instances of their respective said corresponding point representations $\mathbf{p_q}$ extend progressively further away from said first portion, the instances of **q** become progressively less dependent upon said instances of their respective said corresponding point representations $\mathbf{p_q}$.

67. (Currently Amended) The method of Claim 13, wherein said computational system further performs the steps of:

receiving an identification of a geometric entity indicative <u>of</u> having a shape of at least a second portion of the first surface;

second determining, using said geometric entity, at least a collection ($\mathbf{C_2}$) of representations of geometric points indicative of a second geometric object, wherein said point representations of $\mathbf{C_2}$ are representative of a surface area of the second geometric object, said point representations of $\mathbf{C_2}$ used in determining a second shape for said first surface;

wherein a geometric computation determines said first surface so that (C-1) and (C-2) following are satisfied:

(C-1) there is a corresponding portion of said second geometric object that effectively coincides with first surface, wherein said corresponding portion substantially has the shape of said geometric entity; and

(C-2) said second shape of said first surface approaches said shape of said geometric entity when said first surface approaches said corresponding portion.

68. (Original) The method of Claim 67, wherein at least one point **q** of said subcollection is determined using a point representation **p** from $\mathbf{C}_2$, and wherein the at least one point **q** is determined by performing the following substeps:

(D-1) determining corresponding data, $\mathbf{d}_2$, indicative of a closeness between the point representation **p** and the corresponding portion; and

(D-2) using said corresponding data $\mathbf{d}_2$ with the point representation **p** to determine the at least one point **q**.

69. (Original) The method of Claim 67, wherein said portion of said second geometric object is a curve.

70. (Original) The method of Claim 69, wherein said curve effectively overlaps with said geometric entity.

71. (Original) The method of Claim 67, wherein each of said point representations of $\mathbf{C}_2$ includes geometric position data that is invariant between graphical views.

72. (Original) The method of Claim 71, wherein said second geometric object has a dimension greater than or equal to two.

73. (Original) The method of Claim 67, wherein said first surface extends at least between said first portion and said second portion.

74. (Original) The method as claimed in Claim 67, further including a step of identifying, by a user, one or more reference objects, from a graphical display device, wherein each of said reference objects is co-located with one of said first and second portions of said first surface.

75. (Original) The method of Claim 74, wherein for a first of the reference objects, the first reference object is effectively co-located with said first portion, and said first reference object is used to determine said first shape data.

76. (Original) The method of Claim 75, wherein for a second of the reference objects, the second reference object is effectively co-located with said second portion, and said second reference object is used to determine a shape of said first surface at said second portion.

77. (Original) The method of Claim 74, wherein at least one of said reference objects is a marker.

78. (Original) The method of Claim 67, wherein said geometric computation determines points of said first surface by applying weightings to data indicative of positions identified by locations of points of said first and second geometric objects.

79. (Original) The method as claimed in Claim 78, further including a step of determining said weightings as outputs of one or more blending functions, wherein there is a first blending function, $\boldsymbol{B}_1$, for determining weights for positions identified by locations of points of said first geometric object, and there is a second blending function,

$\boldsymbol{B}_2$, for determining weights for positions identified by locations of points of said second geometric object.

80. (Original) The method of Claim 67, wherein said computational system further performs the following steps:

providing one or more additional geometric entities;

obtaining, for each additional geometric entity (**GE**) of said one or more additional geometric entities, a corresponding geometric object ($\mathbf{G}_{\mathbf{GE}}$) having a portion that effectively coincides with at least a portion of the additional entity **GE**;

wherein each of said corresponding geometric object $\mathbf{G}_{\mathbf{GE}}$ is determined using said additional geometric entity **GE** to which said corresponding geometric object corresponds;

third determining corresponding points for each of said corresponding geometric objects $\mathbf{G}_{\mathbf{GE}}$, wherein for each of said corresponding geometric objects $\mathbf{G}_{\mathbf{GE}}$, at least some of said corresponding points do not effectively coincide with said additional geometric entity **GE** to which said corresponding geometric object corresponds, and said corresponding points are used in determining a corresponding shape for said first surface;

wherein said geometric computation determines said first surface such that for each of said corresponding geometric objects $\mathbf{G}_{\mathbf{GE}}$, (D-1) and (D-2) following are satisfied:

(D-1) there is a corresponding portion of said first surface that effectively coincides with the corresponding geometric object $\mathbf{G}_{\mathbf{GE}}$; and

(D-2) a contour of said first surface approaches said corresponding shape for the corresponding geometric object $\mathbf{G}_{\mathbf{GE}}$ when points of said first surface approach said additional geometric entity **GE** to which the corresponding geometric object corresponds.

81. (Original) The method of Claim 67, wherein said geometric computation is progressively less dependent upon said point representations of $\mathbf{C}_2$ as geometric

position data for said point representations of $\mathbf{C}_2$ extent progressively further away from said second portion,

wherein for each of the point representations of $\mathbf{C}_2$, the geometric position data the point representation is invariant between graphical views.

82. (Original) The method of Claim 67, wherein said generating step includes computing a weighted sum of geometric positions for obtaining said point, $\mathbf{q}$, of $\mathbf{R}$, wherein said geometric positions are obtained using at least one point from each of said collections $\mathbf{C}$ and $\mathbf{C}_2$.

83. (Original) The method as claimed in Claim 82, wherein said weighted sum includes weights wherein at least some of said weights are obtained using a corresponding blending function, said blending function having a range of 0 to 1.

84. (Original) The method as claimed in Claim 82, wherein said weighted sum includes weights wherein for the point $\mathbf{q}$, there are one or more of said weights that are dependent upon a parametric pre-image of $\mathbf{q}$.

85. (Original) The method of Claim 67, wherein for each of the points $\mathbf{q}$, $\mathbf{q}$ is dependent upon a corresponding point $\mathbf{p}_1$ from said first geometric object and upon a corresponding point $\mathbf{p}_2$ from second geometric object.

86. (Original) The method of Claim 85, wherein when a parametric pre-image of $\mathbf{q}$ is closer to a parametric pre-image of said first portion than to a parametric pre-image of said second portion, then $\mathbf{q}$ is more dependent upon $\mathbf{p}_1$ than $\mathbf{p}_2$.

87. (Original) The method of Claim 86, wherein at least one object of said first and second geometric objects includes a parametric surface having a parameterization.

88. (Currently Amended) The method of Claim 87, wherein said geometric computation uses said parameterization for obtaining said first surface as a blending to another surface, wherein said at least one object, of said first and second geometric objects, provides ~~of~~ a characteristic of said blending.

89. (Original) The method of Claim 88, wherein said characteristic is one of: a tangent continuity, a curvature continuity, G1 continuity, differentiability, curvature, and arbitrarily high orders of continuity.

90. (Currently Amended) The method as claimed in Claim 13, wherein said computational system simultaneously ~~performing~~ performs the following steps (C-1) and (C-2):

(C-1) changing said first shape data in response to a user input of a substantially continuous time series of change requests for changing said first surface into a second surface;

(C-2) displaying said second surface according to modifications indicative of said change requests;

wherein during an inputting of one of said change requests, said displaying step simultaneously performs a substep of graphically displaying, for one or more previously input change requests of said time series, corresponding modifications to said first surface.

91. (Original) The method as claimed in Claim 13, wherein said computational system further performs the following steps:

obtaining additional data indicative of a change in shape of said first geometric cbject; and

using said additional data to determine a corresponding changed version of said first geometric object;

wherein said additional data is invariant between different graphical views.

92. (Original) The method as claimed in Claim 91, wherein said computational system further performs the following steps:

determining a different collection **C′** of representations of geometric points using said changed version of said first geometric object;

re-performing said step of generating using said different collection **C′** in place of said the collection **C**.

93. (Original) The method as claimed in Claim 13, wherein said computational system further performs the following steps:

obtaining a portion of said first surface as a developable surface;

constructing a closed curve boundary for said developable surface, wherein said boundary identifies an interior of said closed curve on said developable surface;

wherein said step of constructing includes generating said boundary as a profile curve having a corresponding isocline ribbon for use in deriving a blended surface having said boundary as a boundary for said blended surface;

trimming said developable surface to approximately said boundary so that substantially only said interior of said developable surface is graphically displayed; and

graphically attaching a label to said interior so that said label substantially covers said interior.

94. (Original) The method as claimed in Claim 13, wherein said computational system further performs the following steps:

changing one of a shape and a orientation of said first geometric object thereby obtaining a changed first geometric object;

second displaying, to a user, a second display of another version of said first surface, wherein said another version is determined using said changed first geometric object, and wherein a shape difference between said first surface and said another version

is determined using a value for said one of the orientation and shape changed in said step of changing; and

wherein the second display of said another version includes a point, $\mathbf{q}_1$, derived using said changed first geometric object, wherein said point $\mathbf{q}_1$ is not representative of a point of said changed first geometric object.

95. (Original) A method as claimed in Claim 94, wherein said computational system further performs the following step of :iteratively performing said steps of changing and second displaying, wherein each iteration of said changing step includes inputting, by the user, a next portion of a substantially continuous time series of change requests for changing said first surface;

wherein said iteratively performed steps of changing and second displaying are interleaved so that the user perceives a substantially real time deformation of said first surface during said continuous time series of change requests.

96. (Original) The method as claimed in Claim 13, further including:

identifying, by a user, one or more reference objects from a display of a graphical display device;

wherein said computational system further performs the following steps:

determining said first shape data using of at least some of: (i) through (iii) following: (i) a location of one of said reference objects, (ii) directional information indicative of one or more directions from said reference objects, and (iii) a tangent to one of said reference objects;

wherein said first shape data provides geometric information for determining at least one of a position, orientation, and shape for said first geometric object.

97. (Original) The method as claimed in Claim 96, wherein said computational system further performs the following steps:

first generating said first geometric object using said first shape data; and

graphically displaying said first geometric object.

98. (Original) The method as claimed in Claim 13, wherein a first portion of said first surface follows a shape of said first geometric object and a second portion of said first surface follows a shape of a second geometric object, and wherein points of said first surface are determined by applying weightings to results from points on said first and second geometric objects.

99. (Original) The method as claimed in Claim 13, wherein said computational system further performs the following steps:

providing a representation of a curve having an extent along said curve;

obtaining, for each of a plurality of points on the curve extent, corresponding data indicative of a shape of said first geometric object in at least a neighborhood of the point;

wherein said first geometric object follows a shape of the curve throughout said extent;

determining data **D** representative of a change in location of at least one point of said first geometric object, said at least one point not being a point on said first surface;

modifying a shape of said first surface by using said data **D**, thereby obtaining a second surface; and

displaying said second surface with said modified shape on a graphical display.

100. (Original) Data storage for a computer program that performs the following steps:

(1) first obtaining first shape data indicative of a shape of at least a first portion of a first surface;

(2) first determining, using said first shape data, at least a collection (**C**) of representations of geometric points, wherein the collection **C** is indicative of a first

geometric object having a dimension greater than or equal to two, and wherein (A-1) and (A-2) following hold:

(A-1) each of the point representations of **C** includes geometric position data that is invariant between graphical views, and, in at least one graphical view of the point representations, the point representations are distinct from said first portion;

(A-2) each point representation of the collection **C** is determined using said first shape data;

(3) generating a representation (**R**) of said first surface, wherein for at least a subcollection of points of **R**, the subcollection being representative of a surface portion of said first surface, each point **q** of the subcollection, is determined by performing the following steps (B-1) through (B-3):

(B-1) obtaining a point representation $\mathbf{p_q}$ from the collection **C**;

(B-2) determining closeness data, $\mathbf{d_q}$, indicative of a closeness between $\mathbf{p_q}$ and a corresponding point representation $\mathbf{p_s}$ of said first shape data, wherein $\mathbf{p_s}$ is used in determining $\mathbf{p_q}$; and

(B-3) using said closeness data $\mathbf{d_q}$ and the point representation $\mathbf{p_q}$ in determining **q**;

wherein as instances of the point representation $\mathbf{p_q}$ become progressively closer to their corresponding point representations $\mathbf{p_s}$, the corresponding instances of closeness data $\mathbf{d_q}$ are used for determining corresponding instances of **q** such that said corresponding instances of **q** become progressively closer to their respective corresponding $\mathbf{p_q}$ instances; and

(4) graphically displaying said representation **R** of said first surface.

101. (Cancelled)

102. (Cancelled)